AndroGel® 1% CIII

A.09.063.0032728 Issued 12/00 80-0005-00 AGL00137A

DESCRIPTION

AndroGel* (testosterone gel) is a clear, colorless hydroalcoholic gel
containing 19% testosterone, AndroGel* provides continuous transdermal delihery of testosterone, the primary circulating endogenous
androgen, for 24 hours following a single aphication to intact, clean,
dry skin of the shoulders, upper arms and/or addention

A daily application of Androise¹⁵ 56, 7.5 C, or 10 C contains 50 mg, 75 mg or 100 mg of testications expectively, to be applied datasets after a size of the applied datasets days to the applied attainment of the applied attainment of the applied attainment of the about part of the applied attainment of the about part of the active pharmacologic imgeledies in Androise¹⁶ is estocetoment. The active pharmacologic imgeledies in Androise¹⁶ is estocetoment. Testosterome USP is a white to practically white crystalline power chemically described as 17 To be they pharmacologic applied as 12 To be applied as 13 To be applied as 14 To be applied as 15 To be appli

C₁₉H₂₈O₂ MW 288.42

Inactive ingredients in AndroGel* are ethanol 68.9%, purified water, sodium hydroxide, Carbomer 940 and isopropyl myristate; these ingredients are not pharmacologically active.

CLINICAL PHARMACOLOGY

AndroGel* (testosterone gel) delivers physiologic amounts of testosterone, producing circulating testosterone concentrations that approximate normal levels (298 – 1043 ng/dL) seen in healthy men. Testosterone—General Androgen Effects:

Endogenous androgens, including testosterone and dihydrotestosterone (DHT), are responsible for the normal growth and development of the male sex organs and for maintenance of secondary sex characteristics. These effects include the growth and maturation of prostate, seminal vesicles, penis, and scrotum; the development of male hair distribution, such as facial, pubic, chest, and axillary hair; laryngeal enlargement, vocal chord thickening, alterations in body musculature, and fat distribution. Testosterone and DHT are necessary for the normal development of secondary sex characteristics. Male hypogonadism results from insufficient secretion of testosterone and is characterized by low serum testosterone concentrations. Symptoms associated with male hypogonadism include impotence and decreased sexual desire, fatigue and loss of energy, mood depression, regression of secondary sexual characteristics and osteoporosis. Hypogonadism is a risk factor for osteoporosis in men. Drugs in the androgen class also promote retention of nitrogen, sodium, potassium, phosphorus, and decreased urinary excretion of calcium. Androgens have been reported to increase protein anabolism and decrease protein catabolism. Nitrogen balance is improved only when there is sufficient intake of calories and protein. Androgens are responsible for the growth spurt of adolescence and for the eventual termination of linear growth brought about by fusion of the epiphyseal growth centers. In children, exogenous androgens accelerate linear growth rates but may cause a disproportionate advancement in bone maturation. Use over long periods may result in fusion of the epiphyseal growth centers and termination of the growth process. Androgens have been reported to

buring excigencus administration of androgens, endogenous testoster one release may be inhibited through feedback inhibition of patulary luteritums phormone (LH). All lerge doses of exogenous androgens, sperimatogeness may also be suppressed through redebback inhibition of putuary foliticie-simulating homone (ESH). There is a lack of substantial evidence that androgens are effective in accelerating tracture healing or in shortening post-surgical

stimulate the production of red blood cells by enhancing erythro-

convalescence

poietin production.

Pharmacokinetics Absorption

Aest-colin* a hydroxicoholic formation that dries quidely when puppled to the sist area. The sidn serves as a recursior for the sustainant release of testistence into the systemic corollation. Approximately 10% of the testistence not spepiled in the six surface from Antifocil* is disorbed into systemic circulation. Herefore, S. G. and O. G. of Antifocil* systemically delivers approximately 5 mg and 10 mg of testistence, respectively, in a serial release of the six of the si continues for the entire 24-hour dosing interval. Serum concentrations approximate the steady state level by the end of the first 24 hours and are at steady state by the second or third day of dosing.

With single daily applications of AndroGet[®], follow-up measurements 30,90 and 180 days after starting teatment have confirmed that seriam testosterone concentrations are generally mentanned that seriam testosterone concentrations are generally mentanned within the eugonodist range. Figure 1 summarizes the Z4-hour between the Figure 1 summarizes the Z4-hour on 15 or 10 fo 15 or 40 for 40 seriam share for testosterone for patients maintained on 15 or 10 fo 15 or 40 for 40 seriam share for the S4-hour maintained for 5 for 16 for 40 for 40 seriam share for 15 for 60 for 40 for 40 seriam share for 60 for 60

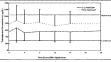


Figure 1. Mean (±SD) Steady-State Serum Testosterone Concentrations on Day 30 in Patients Applying AndroGel® Once Daily

When Androded "treatment is discontinued after achieving steady state, serum testosterone levels remain in the normal range for 24 to 48 hours but return to their pretreatment levels by the fifth day after the last application.

<u>Descriptions</u>
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There is considerable variation in the half-life of testosterone as reported in the literature, ranging from ten to 100 minutes.

Testosterone is metabolized for various 17-knot serriods through or different politywes. The major active metabolities of testosterone are estatable and DHT. DHT birds with geneter affinity of staffections of testosterone. In many tissues, the activity of testosterone deprets on the reduction to DHT, which birds to provide of the major active testosterone are provided to ported to the nacines where it immediates tensor-priors and other ported to the nacines where it immediate tensor-priors and other particular portions are to the provided to turbum resident to 3 a card 34 particles and/ord.

DHT concentrations increased in parallel with testistations considerations during Anicode's treatment, familiar 180 days of treatment, mean DHT concentrations we within the normal range with 5 dancticed's and were south 7% shown the normal range site is 10 dose. The mean seady State DHT/IT rate during 180 days of Andicod's treatment remained within remail lambs, to determined referenced in the contract lambs, to determined from 0.21 to 0.25 (5 Giday) and from 0.27 to 0.33 (10 Giday). Excretion

About 90% of a dose of testosterone given intramuscularly is exceeded in the urine as glucuronic and sulfuric acid conjugates of testosterone and its metabolities; about 6% of a dose is exerted in the feces, mostly in the unconjugated form. Inactivation of testosterone occurs primarily in the liver. Social Ponulations

in patients treated with AndroGel®, there are no observed differences in the average daily serum testosterone concentration at steady-state based on age, cause of hypogoraidsm or body mass index. No formal studies were conducted involving patients with real of hepatic insufficiencies.

Clinical Studies

Additional Services of the expectation of an indicenter, rendermined, partials of groups, actives corrolled. Flood systial is 2 (17) proposed time to 18 solidy was conducted in 2 (three Sureny the Initial Treatment Protect (180) s 1901. 3 (20) and time were rendermed to 4 initials (180) s 1901. 3 (20) and 20) a

Mean peak, trough and average serum testosterone concentrations within the normal range (298-1043 ng/dL) were achieved on the list day of treatment with doses of 5 G and 10 G. In patients continuing on Anno Gel? 5 G and 10 G. Rhase ment retestatemes levels were maintained within the normal range for the 18G-day direction of the Study Figure 2 summarizes the 24-four pharmacokinetic profiles of testosterone administred as AndroGel? for 30, 90 and 180 days. Testosterone concentrations were maintained as leng as the patient continued to properly apply the pre-schold AntorGel? In testing the second and the

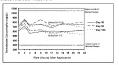


Figure 2. Mean Steady-State Testosterone Concentrations in Patients with Once-Daily AndroGel* Therapy

Table 1 summarizes the mean testosterone concentrations on Freatment Day 180 for patients receiving 5 6, 7,5 6, or 10 G of AndroGel*, 146 7-5 G dose rockued mean concentrations interme-

diate to those produced by 5 G and 10 G of AndroGel?

Table 1: Mean (±SD) Steady-State Serum Testosterone
Concentrations During Therapy (Day 190)

Concentrations During Therapy (Day 180)						
	5 G	7.5 G	10 G			
	N = 44	N = 37	N = 48			
avg	555 ± 225	601 ± 309	713 ± 209			
max	830 ± 347	901 ± 471	1083 ± 434			
rnio	371 + 165	406 = 220	485 + 158			

Crinin 371 ± 165 406 ± 220 485 ± 156

Of 129 hypogonadal men who were appropriately titrated with Androcel' and who had sufficient data for analysis, 87% achieved an average sorum testosterone level within the normal range

Treatment Day 180. AndroGel* 5 G/day and 10 G/day resulted in significant increases over time in total body mass and total body lean mass, while total body fat mass and the percent body fat decreased significantly. These changes were maintained for 180 days of treatment. Changes in the 7.5 G dose group were similar. Bone mineral density in both hip and spine increased significantly from Baseline to Day 180 with 10 G AndroGel®. AndroGel* treatment at 5 G/day and 10 G/day for 90 days produced significant improvement in libido (measured by sexual motivation, sexual activity and enjoyment of sexual activity as assessed by patient responses to a questionnaire). The degree of penile erection as subjectively estimated by the patients, increased with AndroGel® treatment, as did the subjective score for "satisfactory duration of erection". AndroGel® treatment at 5 G/day and 10 G/day produced positive effects on mood and fatigue. Similar changes were seen after 180 days of treatment and in the group treated with the 7.5 G dose. DHT concentrations increased in parallel with testosterone concentra tions at AndroGel® doses of 5 G/day and 10 G/day, but the DHT/T ratio stayed within the normal range, indicating enhanced availability of the major physiologically active androgen. Serum estradiol (E2) concentrations increased significantly within 30 days of starting treatment with AndroGel" 5 or 10 G/day and remained elevated throughout the treatment period but remained within the normal range for eugonadal men. Serum levels of SHBG decreased very slightly (1 to 11%) during AndroGel® treatment. In men with hypergonadotropic hypogonadism, serum levels of LH and FSH fell in a dose- and time- dependent manner during treatment with AndroGel® Potential for testosterone transfer

The potential for determal standardown transitive following Androde's use was evaluated in a clinical study between males Goods with Androde's (100) algorithms of the milk potential. Two to 12 hours after Androde's (100) algorithms by the milk supplies, the couple, of New Goods or Landardown and Landardown and Landardown and coupled in graphical transitive to their three study conditions all to the Androde's against and the Landardown and conditions all 2.2 times the Number of wast at some time during the study. When shall covered the against conditions the study conditions all shall covered the against conditions the study conditions and shall covered the against conditions the study of the shall covered the against conditions and the males to the terroley protection.

INDICATIONS AND USAGE

Andocafe is inducated for replacement therapy in males for conditions associated with a definency or observed or devolgenous telestosterone.

1. Primary hypogenosidism (congenital or acquired) — testicular latilative due to cryptochridism, bilateral crision, corbitis, varietism tessis syndrome, orchectomy, filinefelter's syndrome, chemotherapy or tous clampa from affichal or heavy metals. These men usually have low sorum sessosterone levels and gonadotrophis (FSR. 11) allower the normal range.

2. Hypogonodotropic hypogonadism (congenital or arquired)—ideopathic gonadotropin or lutenizing hermone-releasing hormon (LHRH) deficiency or pituliary-hypothislamic injury from tumors, trauma, or radiation. These men have low testosterone serum levels but have gonadotropins in the normal of low range.

of and CONTRAINDICATIONS

Androgens are contraindicated in men with carcinoma of the

breast or known or suspected carcinoma of the prostate. AndroGel* is not indicated for use in women, has not been evaluated in women, and must not be used in women.

Pregnant women should avoid skin contact with AndroGel* application sites in men. Testosterone may cause fetal harm. In the event that unwashed or unclothed skin to which AndroGel* has been applied does come in direct contact with the skin of a pregnant woman, the general area of contact on the woman should be washed with soap and water as soon as possible. In vitro studies show that residual restosterone is removed from the skin surface by washing with soap and water

AndroGet® should not be used in patients with known hypersensitivity to any of its ingredients, including testosterone USP that is synthesized from soy.

WARNINGS

- 1. Prolonged use of high doses of orally active 17-alpha-alkyl androgens (e.g., methyltestosterone) has been associated with serious hepatic adverse effects (peliosis hepatis, hepatic neoplasms, cholestatic hepatitis, and jaundice). Peliosis nepatis can be a life-threatening or fatal complication. Long-term therapy with testo-sterone enanthate, which elevates blood levels for prolonged periods, has produced multiple hepatic adenomas. Testosterone is not known to produce these adverse effects.
- 2. Geriatric patients treated with androgens may be at an increased risk for the development of prostatic hyperplasia and prostatic carcinoma. Geriatric nations and other nations with clinical or demographic characteristics that are recognized to be associated with an in-
- creased risk of prostate cancer should be evaluated for the presence of prostate cancer prior to initiation of testosterone replacement therapy. In men receiving testosterone replacement therapy, surveillance for prostate cancer should be consistent with current practices for eugonadal men (see PRECAUTIONS: Carcinogenesis, Mutagenesis, Impairment of Fertility and Laboratory Tests). 4. Edema with or without congestive heart failure may be a serious
- complication in patients with preexisting cardiac, renal, or hepatic disease. In addition to discontinuation of the drug, diuretic therapy may be required.
- 5. Gynecomastia frequently develops and occasionally persists in patients being treated for hypogonadism
- 6. The treatment of hypogonadal men with testosterone esters may potentiate sleep agnea in some patients, especially those with risk factors such as obesity or chronic lung diseases.

PRECAUTIONS

Transfer of testosterone to another person can occur when vigorous skin-to-skin contact is made with the application site (see Clinical Studies). The following precautions are recommended to minimize potential transfer of testosterone from AndroGel®-treated skin to another person:

Patients should wash their hands immediately with soap and water after application of AndroGel*.

Patients should cover the application site(s) with clothing after the gel has dried (e.g. a shirt). in the event that unwashed or unclothed skin to which

AndroGel® has been applied does come in direct contact with the skin of another person, the general area of contact on the other person should be washed with soap and water as soon as possible. In vitro studies show that residual testosterone is removed from the skin surface by washing with soap and water.

Changes in body hair distribution, significant increase in acne, or other signs of virilization of the female partner should be brought to the attention of a physician. General
The physician should instruct patients to report any of the following:

Too frequent or persistent erections of the penis.

Any nausea, vomiting, changes in skin color, or ankle swelling. Breathing disturbances, including those associated with sleep. Information for Patients

Advise patients to carefully read the information brochure that accompanies each carton of 30 AndroGel® smale-use packets. Advise patients of the following:

AndroGel® should not be applied to the scrotum AndroGel* should be applied once daily to clean dry skin.

After application of AndroGel*, it is currently unknown for how long showering or swimming should be delayed. For optimal absorption of testosterone, it appears reasonable to wait at least 5-6 hours after application prior to showering or swimming Nevertheless, showering or swimming after just 1 hour should have a minimal effect on the amount of AndroGel®

absorbed if done very infrequently. aboratory Tests

- 1. Hemoglobin and hematocrit levels should be checked periodically (to detect polycythemia) in patients on long-term androgen therapy. 2. Liver function, prostatic specific antigen, cholesterol, and high density importation should be checked periodically.
- 3. To ensure proper dosing, serum testosterone concentrations should be measured (see DOSAGE AND ADMINISTRATION).

Drug Interactions

Oxyphenbutazone: Concurrent administration of oxyphenbutazone and androgens may result in elevated serum levels of oxyphenbutazone. Insulin: In diabetic patients, the metabolic effects of androgens may decrease blood glucose and, therefore, insulin requirements. Propranolol: In a published pharmacokinetic study of an injectable testosterone product, administration of testosterone cypionate led to an increased clearance of propranolol in the majority of men tested. Corticosteroids: The concurrent administration of testosterone with ACTH or corticosteroids may enhance edema formation; thus, these drugs should be administered cautiously, particularly in patients with cardiac or hepatic disease. Drug/Laboratory Test Interactions

Androgens may decrease levels of thyroxin-binding globulin, resulting in decreased total T4 serum levels and increased resin uptake of T3 and T4. Free thyroid hormone levels remain unchanged, however, and there is no clinical evidence of thyroid dysfunction

Carcinogenesis, Mutagenesis, Impairment of Fertility

Animal Data: Testosterone has been tested by subcutaneous injection and implantation in mice and rats. In mice, the implant induced cervical-uterine tumors, which metastasized in some cases. There is suggestive evidence that injection of testosterone into some strains of female mice increases their susceptibility to hepatoma. Testosterone is also known to increase the number of tumors and decrease the degree of differentiation of chemically induced carcinomas of the liver in rats. Human Data: There are rare reports of hepatocellular carcinoma

in patients receiving long-term oral therapy with androgens in high doses. Withdrawal of the drugs did not lead to regression of the tumors in all cases Geriatric patients treated with andropens may be at an increased risk for

the development of prostatic hyperplasia and prostatic carcinoma. Geriatric patients and other patients with clinical or demographic characteristics that are recognized to be associated with an increased risk of prostate cancer should be evaluated for the presence of prostate cancer prior to initiation of testosterone replacement therapy. In men receiving testosterone replacement therapy, surveillance

for prostate cancer should be consistent with current practices for eugonadal men. Pregnancy Category X (see Contraindications)—Teratogenic Effects: AndroGel[®] is not indicated for women and must not be used in women. Nursing Mothers: AndroGel* is not indicated for women and must not be used in women.

Pediatric Use: Safety and efficacy of AndroGel® in pediatric patients have not been established. ADVERSE REACTIONS

In a controlled clinical study, 154 patients were treated with AndroGel* for up to 6 months (see Clinical Studies). Adverse Events possibly, probably or definitely related to the use of AndroGel* and reported by ≥ 1% of the patients are listed in Table 2

Table 2. Adverse Events Possibly, Probably or Definitely Related to Use of AndroGel® in the Controlled Clinical Trial

Adverse Event	5 G	7.5 G	10 G
Acne	196	3%	8%
Alopecia	1%	0%	196
Application Site Reaction	5%	3%	4%
Asthenia	0%	3%	1%
Depression	196	0%	1%
Emotional Lability	0%	3%	3%
Gynecomastia	196	0%	3%
Headache	4%	396	0%
Hypertension	3%	0%	396
Láb Test Abnormal*	6%	5%	3%
Libido Decreased	0%	3%	1%
Nervousness	0%	3%	196
Pain Breast	196	3%	1%
Prostate Disorder 14	3%	396	596
Testis Disorder	3%	0%	0%
 Lab test abnormal occur 	erred in ni	ne patients with	one or more
of the following events:	elevated	bemodlobin or	hematocrit

hyperlipidemia, elevated triglycerides, hypokalemia. decreased HDL, elevated glucose, elevated creatinine, or elevated total biliruhin. ** Prostate disorders included five patients with enlarged prostate, one patient with BPH, and one patient with elevated PSA results.

The following adverse events possibly related to the use of AndroGel® occurred in fewer than 1% of patients: amnesia, anxiety, discolored hair, dizziness, dry skin, hirsutism, hostility, impaired urination, paresthesia, penis disorder, peripheral edema. sweating, and vasodilation

In this clinical trial of AndroGel", skin reactions at the site of application were occasionally reported with AndroGel®, but none was severe enough to require treatment or discontinuation of drug. Six (4%) patients in this trial had adverse events that led to discontinuation of AndroGel®. These events included the following: cerebral hemorrhage, convulsion (neither of which were considered related to AndroGel® administration), depression, sadness, memory loss, elevated prostate specific antigen and hypertension. No AndroGel® patients discontinued due to skin reactions. In an uncontrolled pharmacokinetic study of 10 patients, two had adverse events associated with AndroGeth these were asthenia and depression in one patient and increased libido and hyperkinesia in the other. Among 17 patients in foreign clinical studies there was 1 instance each of acne, erythema and benion prostate adenoma associated with a 2.5% restosterone gel formulation applied dermally. One hundred six (106) patients have received AndroGel® for up to 12 months in a long-term follow-up study for patients who completed the controlled clinical trial. The preliminary safety results from this study are consistent with those reported for the controlled clinical trial. Table 3 summarizes those adverse events possibly, probably or definitely related to the use of AndroGel® and reported by at least 1% of the total number of patients during long-term exposure to AndroGel®.

Table 3. Incidence of Adverse Events Possibly, Probably or Definitely Related to the Use of AndroGel® in the Long-Term. Follow-up Study

	Dose of AndroGel®			
Adverse Event	5 G	7.5 G	10 G	
Lab Test Abnormal*	4.2%	0.0%	6.3%	
Peripheral Edema	1.4%	0.0%	3.1%	
Acne	2.8%	0.0%	12.5%	
Application Site Reaction	9.7%	10.0%	3.1%	
Prostate Disorder**	2.8%	5.0%	18.8%	
Urination Impaired	2.8%	0.0%	0.0%	
Lab test abnormal include				
GTP, elevated hematocrit ar	td hemogli	obin, increase	d total biliru	

bin, worsened hyperlipidemia, decreased HDL, and hypokalemia ** Prostate disorders included enlarged prostate, elevated PSA

results, and in one patient, a new diagnosis of prostate cancer; three patients (one taking 7.5 G daily and two taking 10 G daily) discontinued AndroGel* treatment during the long-term study because of such disorders.

DRUG ABUSE AND DEPENDENCE

AndroGel® contains testosterone, a Schedule III controlled substance as defined by the Anabolic Steroids Control Act. Oral ingestion of AndroGel* will not result in clinically significant serum testosterone concentrations due to extensive first-pass

OVERDOSAGE

There is one report of acute overdosage by injection of testosterone enanthate: testosterone levels of up to 11,400 ng/dL were implicated in a cerebrovascular accident. DOSAGE AND ADMINISTRATION

The recommended starting dose of AndroGel® 1% is 5 G delivering 5 mg of testosterone systemically, applied once daily (preferably in the morning) to clean, dry, intact skin of the shoulders and upper arms and/or abdomen. Upon opening the packet(s), the entire contents should be squeezed into the palm of the hand and immediately applied to the application sites. Application sites should be allowed to dry for a few minutes prior to dressing. Hands should be washed with soap and water after AndroGel* has been applied.

Do not apply AndroGel" to the genitals.

Serum testosterone levels should be measured approximately 14 days after initiation of therapy to ensure proper dosing. If the serum testosterone concentration is below the normal range, or if the desired clinical response is not achieved, the daily AndroGel* 1% dose may be increased from 5 G to 7.5 G and from 7.5 G to 10 G as instructed by the physician. HOW SUPPLIED

AndroGel® contains testosterone, a Schedule III controlled substance as defined by the Anabolic Steroids Control Act. AndroGel® is supplied in unit-dose aluminum foil packets in car-

tons of 30. Each packet of 2.5 G or 5.0 G gel contains 25 mg or 50 mg testosterone, respectively, and is supplied as follows: NDC Number Strength Package Size 30 packets: 2.5 G per packet 0051-8425-30 1% (25 mg)

0051-8450-30 1% (50 mg) 30 packets: 5 G per packet Storage Store at controlled room temperature 20-25°C (68-77°F) [see USP].

Disposal Used AndroGel* packets should be discarded in household trash in a manner that prevents accidental application or ingestion by children or nets

Rx Only

Manufactured by Laboratoires Regins Iscourson Montrouge, France

Unimed Pharmaceuticals, Inc. A Solvay Pharmaceuticals, Inc. Company Deerfield, IL 60015-2544, USA

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